

AMENDED VERSION OF THE CLAIMS

9. A method of joining at least two microelectronic components to one another comprising the steps of connecting the components to be joined with a ternary solder alloy consisting essentially of from about 70 to less than 91 wt percent tin, between 6 to about 15 wt % bismuth and 2 to 5 wt % silver.

10. A method as defined in claim 9 wherein said solder alloy consists essentially of about 10-15 wt % bismuth, 3.3-3.5 wt % silver, balance tin.

13. A process for producing circuit boards, comprising the steps of:

producing plated through holes in a circuit board;

inserting the pins of pin-in-hole components into the plated through holes;

producing a stationary wave of liquid solder consisting essentially of from about 70 to less than 91 wt % tin, between 6 to about 15 wt% bismuth and from 2 to 5 wt% silver;

moving the circuit board across the wave with the bottom of the circuit board in contact with the wave, thereby substantially filling the plated through holes with solder;

cooling the circuit board to form solid solder joints.

14. A process for producing circuit boards comprising the steps of:

producing a substrate with multiple wiring layers including exposed metal pads on a surface;

forming a solder paste comprising a flux, an organic vehicle and particles of metal consisting essentially of from about 70 to less than 91 wt % tin, bismuth in excess of 6 wt% and up to about 15 wt% and from 2 to 5 wt% silver;

depositing the solder past upon said substrate;

placing terminals of a surface mount component onto corresponding pads of the substrate;

heating said solder paste to a temperature above the liquidous temperature of the solder paste sufficient to reflow the solder paste to connect the substrate; and

cooling to solidify the connections.